Claims

We claim:

1. An isolated antibody having binding affinity for a nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleoside and/or nucleotide.

2. The isolated antibody of claim 1, wherein said nucleic acid molecule comprises a short interfering nucleic acid (siNA).

3. The isolated antibody of claim 2, wherein said siNA is a duplex siNA.

4. The isolated antibody of claim 3, wherein the 2'-deoxy-2'-fluoro Uridine nucleoside is present in one or both strands of said duplex siNA.

5. The isolated antibody of claim 2, wherein said siNA is a hairpin siNA.

6. The antibody of claim 1, wherein said antibody is a monoclonal antibody.

7. The antibody of claim 1, wherein said antibody is a murine IgG2b antibody.

8. A method for generating a monoclonal antibody (mAb) having binding affinity for nucleic acid molecules having a 2'-deoxy-2'-fluoro Uridine nucleoside or nucleotide comprising:
   (a) conjugating a polynucleotide comprising a 2'-deoxy-2'-fluoro Uridine to a carrier protein to form a polynucleotide-protein conjugate;
   (b) immunizing a mammal with the conjugate from (a);
   (c) obtaining antibody producing cells from the immunized mammal of (b);
   (d) fusing the cells obtained in step (c) with a myeloma cell under conditions suitable for generating a hybridoma; and

(e) using supernatant from the hybridoma of (d) in a fusion screen under conditions suitable for isolating the monoclonal antibody.

9. The method of claim 8, wherein the mammal is a mouse.

10. The method of claim 9, wherein said mouse is a SJL mouse.

11. The method of claim 8, wherein the 2'-deoxy-2'-fluoro Uridine polynucleotide is a biotinylated polynucleotide.

12. The method of claim 8, wherein said nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleoside or nucleotide is a siNA molecule.

13. The method of claim 12, wherein said siNA is a duplex siNA.

14. The method of claim 12, wherein said siNA is a hairpin siNA.

15. A method for generating a monoclonal antibody (mAb) having binding affinity for a short interfering nucleic acid (siNA) comprising:
(a) conjugating the siNA to a carrier protein to form a siNA-protein conjugate;
(b) immunizing a mammal with the conjugate from (a);
(c) obtaining antibody producing cells from the immunized mammal of (b);
(d) fusing the cells obtained in step (c) with a myeloma under conditions suitable for generating a hybridoma; and
(e) using supernatant from the hybridoma of (d) in a fusion screen under conditions suitable for isolating the monoclonal antibody.

16. The method of claim 15, wherein said siNA is a duplex siNA.

17. The method of claim 15, wherein said siNA is a hairpin siNA.

18. A method for detecting the presence of a nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide in a patient comprising:
    (a) obtaining a biological sample from the patient; and
    (b) contacting the sample of (a) with a monoclonal antibody having specific binding affinity for the nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide under conditions suitable for detecting the presence of said nucleic acid molecule in the patient.

19. The method of claim 18, wherein said nucleic acid molecule having a 2'-deoxy-2'-fluoro Uridine nucleotide is a siNA molecule.

20. The method of claim 19, wherein said siNA is a duplex siNA.

21. The method of claim 19, wherein said siNA is a hairpin siNA.

22. A method for detecting the presence of a siNA in a patient comprising:
    (a) obtaining a biological sample from the patient; and
    (b) contacting the sample of (a) with a monoclonal antibody having specific binding affinity for the siNA under conditions suitable for detecting the presence of said siNA in the patient.

23. The method of claim 22, wherein the patient is a patient treated with a siNA molecule having one or more 2'-deoxy-2'-fluoro Uridine nucleotides.

24. A method for screening candidate 2'-deoxy-2'-fluoro modified siNA molecules for bioavailability in a mammal comprising:
    (a) administering the candidate siNA molecule to the mammal;
    (b) obtaining a biological sample from the mammal; and
    (c) contacting the sample of (b) with the antibody of claim 1 under conditions suitable for detecting the presence of the siNA molecule in the sample.

25. The method of claim 24, wherein the mammal is a mouse, rat, or pig.

26. The method of claim 24, wherein the mammal is a human.

27. A method for determining the level of a 2'-deoxy-2'-fluoro modified siNA in a mammal comprising:

(a) administering the candidate siNA molecule to the mammal;

(b) obtaining a biological sample from the mammal;

(c) contacting the sample of (b) with the antibody of claim 1 under conditions suitable for detecting the presence of the siNA molecule in the sample, and

(d) assaying for the siNA molecule in the sample under conditions suitable to determine the level of the siNA molecule in the sample and/or mammal.

28. The method of claim 27, wherein the mammal is a mouse, rat, or pig.

29. The method of claim 27, wherein the mammal is a human.